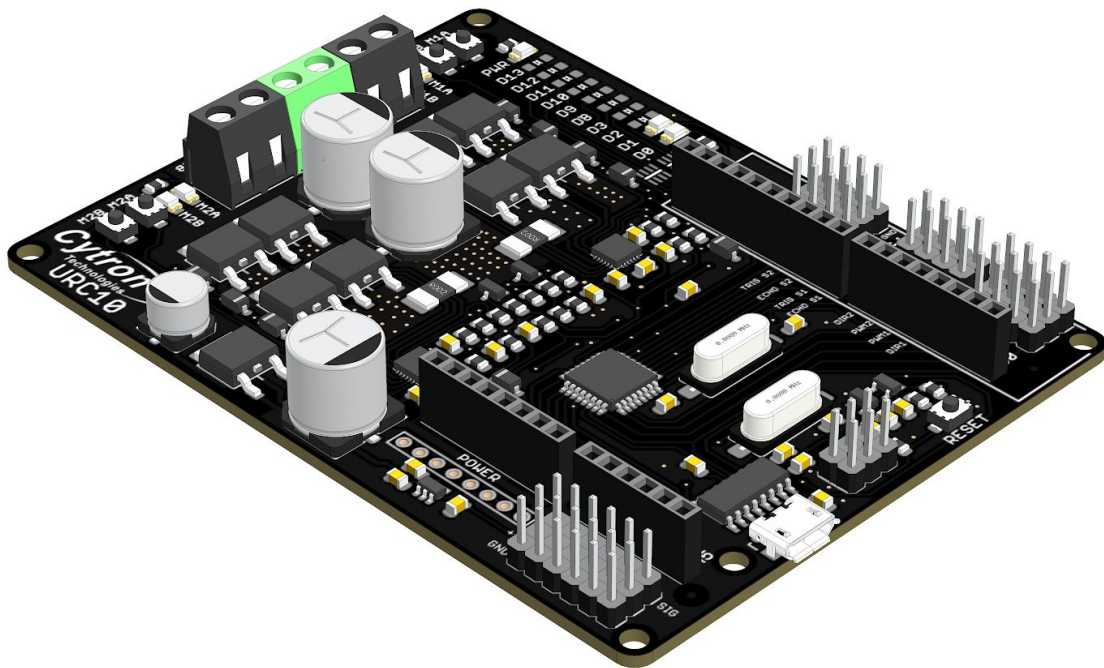




# URC10

## Sumo Robot Controller



## Datasheet

Rev 1.0  
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# 1. BOARD LAYOUT & FUNCTION

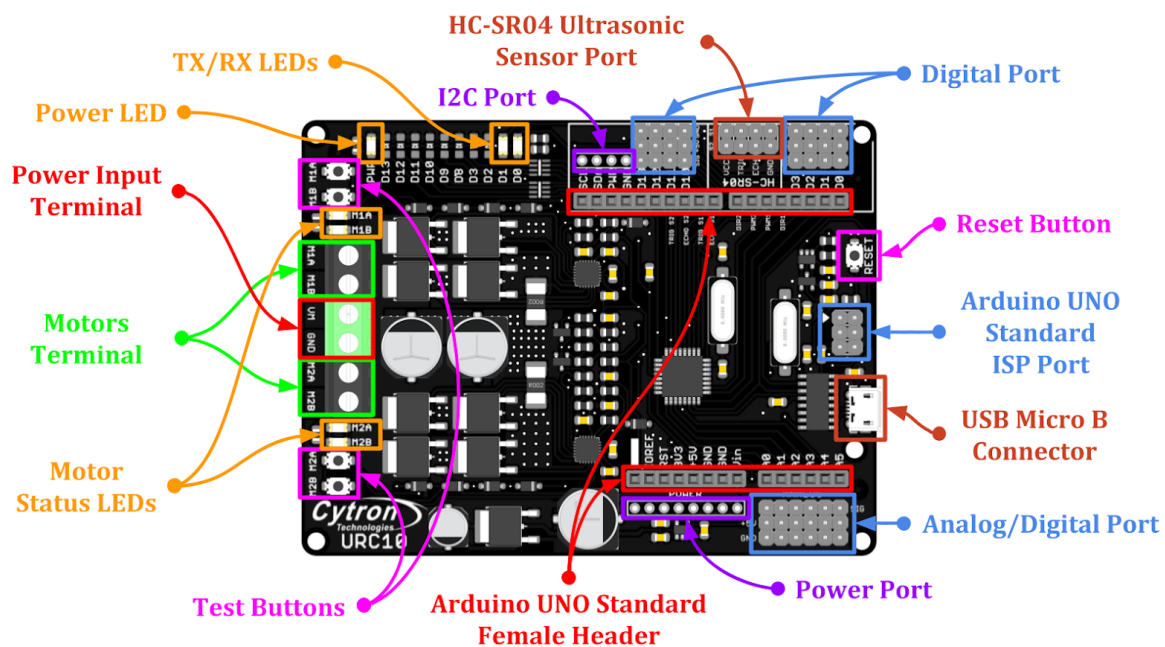
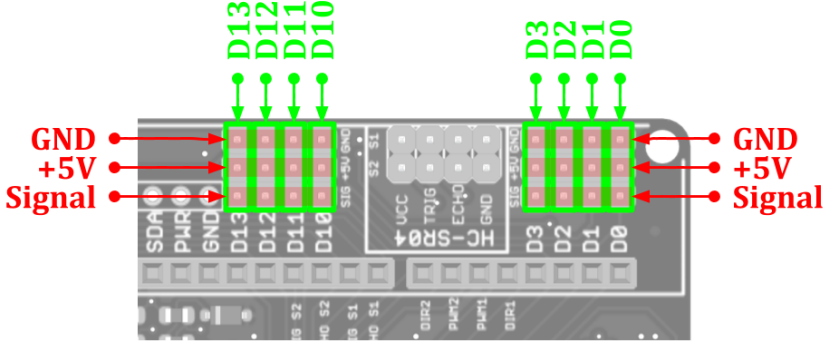
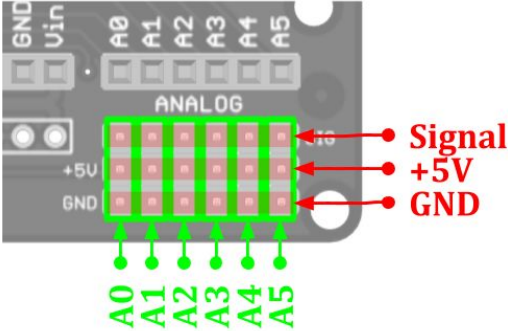
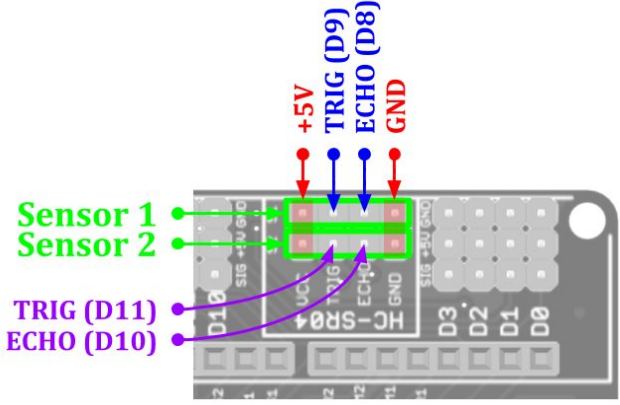


Figure 1: URC10 Board Functions

Function	Description
<b>Power Input Terminal</b>	Connect to battery. <ul style="list-style-type: none"> <li>VM : Positive</li> <li>GND : Negative</li> </ul> <i>Warning : Connecting in reverse polarity will damage the board instantaneously.</i>
<b>Motors Terminal</b>	Connect to motors. Motor direction depends on the polarity.
<b>Power LED</b>	Turn on when power up.
<b>Motor Status LEDs</b>	Turn on when the motor is running. <ul style="list-style-type: none"> <li>M1A / M2A : Forward*</li> <li>M1B / M2B : Backward*</li> </ul>
<b>TX/RX LEDs</b>	Turn on when data is transmitted/received via the serial port.
<b>Test Buttons</b>	Press to test the functionality of the motor driver. Motor will run at full speed. <ul style="list-style-type: none"> <li>M1A / M2A : Forward*</li> <li>M1B / M2B : Backward*</li> </ul>
<b>Reset Button</b>	Press to reset the microcontroller.
<b>Arduino UNO Standard Female Header</b>	The female header follows the standard Arduino UNO form factor. Can be used with compatible Arduino Shield. <i>Note : Pin D4, D5, D6 D7 are connected to motor driver internally. Avoid using shield that uses these pins.</i>

\* Actual motor direction is depending on the motor connection.  
Swapping the connection (MA & MB) will reverse the direction.

Function	Description
Digital Port x 6	<p>Digital Input/Output Port. This port is connected to pin D0 - D3 and D10 - D13. <i>Note : Pin D0 and D1 are used for serial communication.</i></p> 
Analog/Digital Port x 6	<p>Analog Input or Digital Input/Output Port. This port is connected to pin A0 - A5.</p> 
Arduino UNO Standard ISP Port	<p>Standard Arduino UNO ISP Port. Used to load program via AVR Programmer. Can be used for SPI communication too.</p>
HC-SR04 Ultrasonic Sensor Port x 2	<p>Connect to HC-SR04 Ultrasonic Sensor. Sensor 1:  <ul style="list-style-type: none"> <li>ECHO - D8</li> <li>TRIG - D9</li> </ul> Sensor 2:  <ul style="list-style-type: none"> <li>ECHO - D10</li> <li>TRIG - D11</li> </ul> </p> 

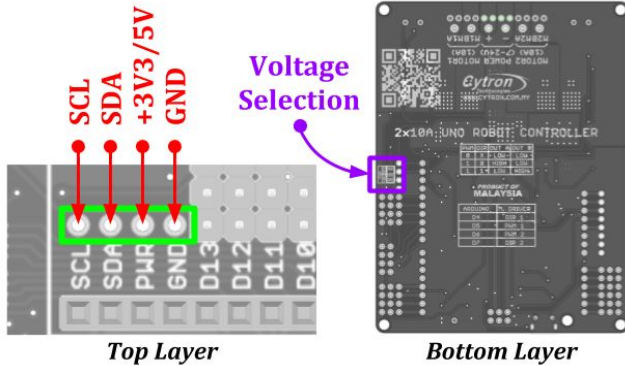
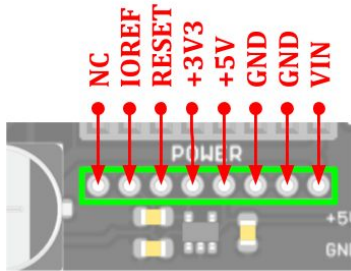
Function	Description
<b>USB Micro B Connector</b>	Used to upload Arduino program from PC. Can be used for debugging purpose too (Serial Monitor).
<b>I2C Port</b>	<p>Connect to I2C slave device. Power voltage is selectable at bottom layer. +3V3 is selected by default. To select +5V, cut trace and solder center pad and 5V pad together.</p>  <p><i>Top Layer</i> <i>Bottom Layer</i></p>
<b>Power Port</b>	<p>Breakout of the Arduino power pins.</p> 
<b>Motor Driver Port (Connected Internally)</b>	<p>These pins are connected to the motor driver internally.</p> <p>Motor 1:</p> <ul style="list-style-type: none"> <li>• DIR - D4</li> <li>• PWM - D5</li> </ul> <p>Motor 2:</p> <ul style="list-style-type: none"> <li>• DIR - D7</li> <li>• PWM - D6</li> </ul>

Table 1: URC10 Board Functions

PWM	DIR	Output A (MA)	Output B (MB)	Motor
Low	X (Don't Care)	Low	Low	Brake
High	Low	High	Low	Forward*
High	High	Low	High	Backward*

Table 2: PWM/DIR Input Truth Table

\* Actual motor direction is depending on the motor connection.  
Swapping the connection (MA & MB) will reverse the direction.

## 2. SPECIFICATIONS

No	Parameters		Min	Max	Unit
1	Power Input Voltage (Vin)		8	25	VDC
2	Maximum Motor Current	Continuous	-	10	A
		Peak (< 10 seconds)	-	30	A
3	Logic Input Voltage	Low Level	0	0.7	V
		High Level	1.5	5.0	V
4	DC +3V3 Output Maximum Current		-	500	mA
5	DC +5V Output Maximum Current		-	1000	mA
6	IO pin Maximum Current		-	20	mA

Table 3: URC10 Absolute Maximum Ratings

## 3. DIMENSION

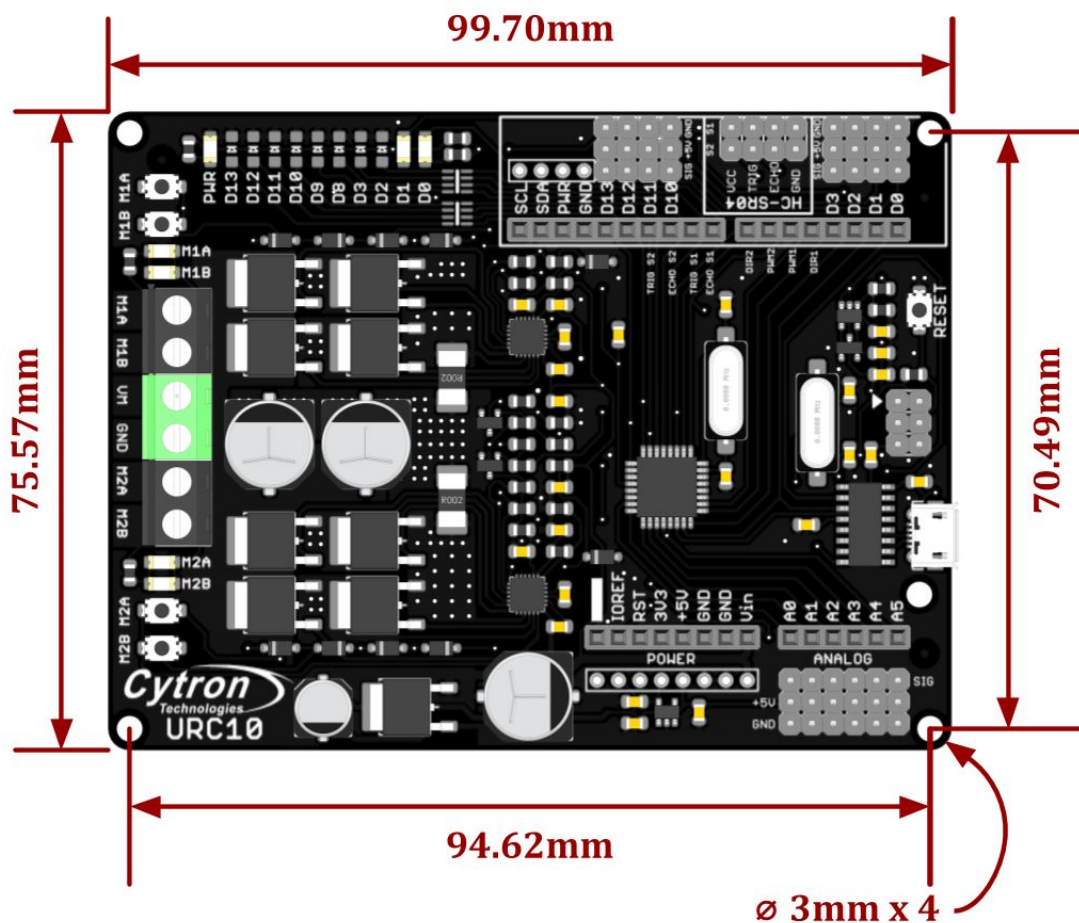


Figure 2: URC10 Dimension

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